The discussion of evolution has long since passed the stage when particular facts could be used to prove general conclusions. The difficulty with the current hypotheses of evolution through selection and mutation is that while apparently supported by some facts, they are as definitely contradicted by others; a theory which can accommodate both series of phenomena has a larger basis of probability than either. From the standpoint of the kinetic theory the rejection of selection as the actuating cause or principle of evolution does not require the denial of selective adaptation. The recognition, on the other hand, that mutations are not caused by environment, does not mean that they are definitely predetermined. The abrupt and striking but more or less sterile aberrations of heredity which occur under inbreeding do not show that evolution depends upon segregation. Neither do they afford evidence against the view that evolutionary progress goes forward through the gradual accumulation of lesser and more normal variations, independent of environment, but not beyond selective influence. The kinetic theory affords the explanation, hitherto lacking, of how selection produces adaptation. It does not set stationary organisms in motion, but it may, at times, determine which variation shall most affect the direction of the motion of the species.

O. F. Cook.

Washington, D. C.,
January 14, 1904.

(Science, N. S., 19: 112, January 15, 1904) that albino mice of mixed ancestry are more prepotent or less recessive than those of pure breed, a result contrary to that which should follow under the pure-germ-cell, character-unit theories of Bateson, Wilson and Castle. The improbability of these mechanical hypotheses was already evident, however, from the fact, known since the time of Darwin, that the crossing of two 'recessive' inbred 'mutations' may bring a return to the ancestral type. The tendency to disregard older data seems to indicate that the recent DeVriesian and Mendelian mutations of terminology are prepotent in closely segregated evolutionary investigations, but the ancestral facts are still vigorous and likely to reassert themselves whenever a wider intercourse of ideas is resumed.

THE ANIMAL PARASITE SUPPOSED TO BE THE CAUSE OF YELLOW FEVER.

In Science of January 1 there appeared a letter signed H. W. Robinson, which purported to be a defense of one of the members of the working party which I arraigned in my article under the above caption in Science of October 23, 1903.

In reference to this letter I beg to state that I am not expected to give any attention to what one has to say whose knowledge of the matter is second-hand, but that I am fully prepared to defend whatever I have written in my article, whenever any of the working party answers to my arraignment of its members.

J. C. Smith.

New Orleans, La.,
January 25, 1904.

SPECIAL ARTICLES.

A FISH NEW TO FLORIDA WATERS.

While dredging off the coast of Florida in 1902, the steamer *Fish Hawk* collected four specimens of a fish whose occurrence in that region was most unexpected and whose known distribution is thus extended in a most interesting direction. The fish in question is the snipe-fish or bellows-fish, *Macrorhamphosus scolopax* (Linnæus), which is common in the Mediterranean and has occasionally been found as far north as the southern coast of England, inhabiting depths up to 170 fathoms. The *Fish Hawk* specimens were taken at two stations in the Gulf Stream off Key West at depths of 98 and 109 fathoms, respectively.

There is one other known occurrence of this fish in American waters, recorded by Storer in the *Proceedings of the Boston Society of Natural History* for 1857 (Vol. VI.), a specimen having been found at Provincetown, Massachusetts.

H. M. Smith.

NOTE ON A RUBBER-PRODUCING PLANT.

Recent experiments have shown some interesting facts in regard to the products of *Picradenia odorata utilis,* Ckll., *Bulletin Colo. College Museum,* December, 1903, a plant belonging to the Compositæ and growing abundantly in the neighborhood of Buena

Vista, Colorado. Mr. F. R. Marsh, of Denver, first called my attention to the fact that the roots of one of our native plants contained rubber, and kindly supplied me with material for experiments.

The roots tested were found to contain from five to twelve per cent. of crude rubber. This product is soluble in carbon bisulphide and benzol; it burns, giving off a strong odor of rubber. Several tests were made which showed that powder made from the bark contained a much larger per cent. than that made from the whole root. The crowns, when cleaned, contained about the same per cent. as the roots; the wool-like material surrounding the crowns contained a small per cent., though it was not so elastic as that taken from the roots and crowns.

The stems and leaves contained a resin soluble in carbon bisulphide, but it was a brown inelastic mass and when burned lacked the characteristic odor of rubber. The seeds contained a resin that superficially resembled that found in the stems.

It is hoped that the occurrence of rubber in the permanent parts of this *Picradenia* and not in the parts lasting only through the season may add to our knowledge as to the use of this substance. A detailed report on the physiological structure of these roots will be made as soon as fresh material can be obtained.

WILMATTE PORTER COCKERELL.
COLORADO COLLEGE,

BOTANICAL NOTES.

PROGRESS IN FORESTRY INSTRUCTION.

IT is but a few years since American university professors have given serious attention to that department of botany which deals with trees, *i. e.*, forestry, and it is a good sign of a broadening view of the work of the university and its relation to the community that not only are courses in forestry now offered by a considerable number of colleges and universities, but in addition their professors are writing books on the subject. Trees are no longer regarded by the botanist as mere species having place in a scientific system of classification, and on a definite portion of the earth's surface. These facts are important; fully as important as they have ever been, but we have learned that these giant plants have other interesting relations. We have found it as interesting to study the biology of a pine or an oak as of a microscopic alga or fungus. How to grow a tree is as legitimate a subject of inquiry as how to grow a particular bacterium or saprophytic fungus. The ecology of the forest affords as many interesting problems as the study of the zones and belts of ponds and swamps.

A little more than five years ago Professor Green, of the University of Minnesota, prepared a little book under the modest title of 'Forestry in Minnesota,' of which an edition of 10,000 was published by the Minnesota Forestry Association. After about three years, this edition being exhausted, Professor Green prepared a second which was published as a bulletin of the Geological and Natural History Survey of Minnesota. He has now revised the book again, enlarging and making it more general, so as to adapt it to the whole of the United States. Its title is now more general also—'Principles of American Forestry'—and it bears the imprint of John Wiley, of New York.

The scope of the book may be learned from an enumeration of the principal chapter headings, as follows: 'The Tree and Tree Growth'; 'The Forest'; 'Forest Influences'; 'Forest Regeneration'; 'Propagation'; 'Forest Protection'; 'Rate of Increase in Timber Trees'; 'Uses of Wood'; 'Durability'; 'Forest Economics'; 'The Important American Timber Trees'; etc.

A single quotation from the chapter on forest regeneration will suffice to show at once the style of treatment and the considerable botanical interest that this study involves, as presented in this admirable book:

> Succession of tree growth is an expression sometimes used as though there were a natural rotation of trees on the land. There is nothing of the sort. Sometimes hardwoods will follow pine, or the pine the hardwoods, where the two were mixed at the time of cutting, and there was a young growth of one or the other kind which had a chance to grow when its competitor was removed. Where land is severely burned after being cut over, the trees that show first are gen-